

Claims

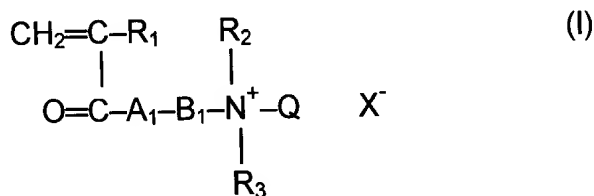
- 5 ~~1. A process for the production of paper which comprises;~~  
 (i) providing a suspension containing cellulosic fibers, and optional fillers,  
 (ii) adding to said suspension a drainage and retention aid comprising a cationic organic polymer having an aromatic group;  
 (iii) forming and dewatering the obtained suspension on a wire, wherein the suspension that is dewatered on the wire has a conductivity of at least 2.0 mS/cm.

10 2. The process of claim 1, wherein the suspension that is dewatered on the wire has a conductivity of at least 5.0 mS/cm.

15 3. The process of claim 1, wherein the cationic organic polymer is a vinyl addition polymer comprising in polymerized form one or more monomers comprising at least one monomer having an aromatic group.

20 4. The process of claim 1, wherein the cationic organic polymer is an acrylamide-based polymer.

25 5. The process of claim 1, wherein the cationic organic polymer comprises in polymerized form a cationic monomer having an aromatic group represented by the general formula (I):



30 wherein R<sub>1</sub> is H or CH<sub>3</sub>, R<sub>2</sub> and R<sub>3</sub> are each an alkyl group having from 1 to 3 carbon atoms, A<sub>1</sub> is O or NH, B<sub>1</sub> is an alkylene group of from 2 to 4 carbon atoms or a hydroxy propylene group, Q is benzyl, and X<sup>-</sup> is an anionic counterion.

6. The process of claim 1, wherein the cationic organic polymer has a weight average molecular weight of at least 1,000,000.

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7. The process of claim 1, wherein the cationic organic polymer is prepared from a monomer mixture comprising from 5 to 20 mole% of cationic monomer having an aromatic group and from 95 to 80 mole% of other copolymerizable monomers.

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8. The process of claim 1, wherein the drainage and retention aid further comprises anionic inorganic particles.

9. The process of claim 8, wherein the anionic inorganic particles are silica-based particles or bentonite.

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10. The process of claim 8, wherein the anionic inorganic particles are aluminium-modified silica-based particles.

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11. The process of claim 1, wherein the drainage and retention aid further comprises a low molecular weight cationic organic polymer.

12. The process of claim 8, wherein the drainage and retention aid further comprises a low molecular weight cationic organic polymer.

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13. The process of claim 1, wherein the drainage and retention aid further comprises an aluminium compound.

14. The process of claim 1, wherein the suspension that is dewatered on the wire has a content of di- and multivalent cations of at least 200 ppm.

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15. The process of claim 1, wherein the suspension comprises recycled fibers.

16. The process of claim 1, further comprising obtaining a wet web of paper and white water from dewatering the suspension on the wire, recirculating white water and optionally introducing fresh water to form a suspension containing cellulosic fibers, and optional fillers, to be dewatered, wherein the amount of fresh water introduced is less than 20 tons per ton of dry paper produced.

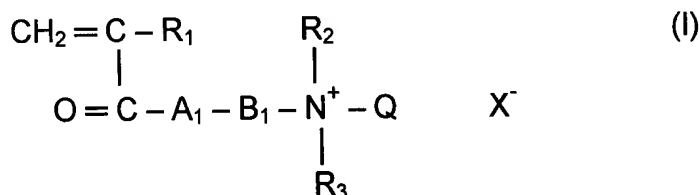
17. The process of claim 16, wherein less than 10 tons of fresh water is introduced per ton of dry paper produced.

18. A process for the production of paper which comprises:

- (i) providing a suspension containing cellulosic fibers, and optional fillers;
- (ii) adding to said suspension a drainage and retention aid comprising a cationic organic polymer having an aromatic group;
- (iii) forming and dewatering the obtained suspension on a wire to obtain a wet web of paper and white water,
- (iv) recirculating white water and optionally introducing fresh water to form a suspension containing cellulosic fibers, and optional fillers, to be dewatered, wherein the amount of fresh water introduced is less than 30 tons per ton of dry paper produced.

19. The process of claim 18, wherein the cationic organic polymer is an acrylamide-based polymer.

20. The process of claim 18, wherein the cationic organic polymer comprises in polymerized form a cationic monomer having an aromatic group represented by the general formula (I):



wherein  $R_1$  is H or  $CH_3$ ,  $R_2$  and  $R_3$  are each an alkyl group having from 1 to 3 carbon atoms,  $A_1$  is O or NH,  $B_1$  is an alkylene group of from 2 to 4 carbon atoms or a hydroxy propylene group, Q is benzyl, and  $X^-$  is an anionic counterion.

add  
H<sub>2</sub>

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